REMARKS

In a telephone interview on September 24, 2002, the Examiner required restriction between the claims of Group I, claims 1-16 and the claims of Group II, claims 17-54. Applicants' attorney made the provisional election of the claims of Group I. Applicants affirm that election and traverse as follows:

The Group I claims, claims 1-16 are drawn to a copper alloy. Claim 1, as amended, is drawn to the copper alloy having a unique combination of elements and further having a high electrical conductivity and a specific microstructure. The claims of Group II, claims 17-54, are drawn to a method to manufacture the copper alloy of claim 1. This method is effective to achieve the combination of high electrical conductivity and the specific microstructure. As noted in Applicants' specification at page 16, there is a cold roll prior to solution annealing that leads to the fine grain homogeneous structure of the present alloy. Because the method of manufacture is interrelated to the claimed copper alloys, the Examiner may properly consider both groups of claims at the same time without undue hardship. It is respectfully requested that the restriction requirement be removed and all claims fully evaluated on their merits.

In the event that the restriction requirement is repeated and made Final, Applicants reaffirm the election of the claims of Group I, claims 1-16. New claims 55-68 are believed properly included in Group I. These claims are also drawn to a copper alloy and are differentiated from the original Group I claims in employing the more restrictive transitional phrase of "consisting of." It is respectfully requested that new claims 55-68 be considered as members of Group I and fully considered by the Examiner.

However, should the Examiner repeat the restriction requirement and make it Final, Applicants reaffirm the election of the claims of Group I.

The Examiner objected to the presentation of three publications presented on information disclosure statements. Regarding JP62-202038 and JP09-263864, the Examiner identified that a legible copy of the foreign patent as well as the reason for presenting that publication had not been presented. Applicants enclose herewith translations of the two Japanese patent documents for consideration by the Examiner. Appended to the translations are the Japanese publications.

Regarding DE19600864C2, the Examiner identified that since an English language version had not been provided it was necessary for an individual designated in 37 C.F.R. 1.56(c) to provide a concise explanation of the relevance of the document. Applicants enclose herewith a translation of DE19600864C2 for full consideration by the Examiner.

Entry of these three documents and consideration during the examination of the present application is respectfully solicited.

The Examiner objected to the disclosure on page 9, lines 26-30 as not being in compliance with 37 C.F.R. 1.74. The present amendment amends that paragraph to comply with 37 C.F.R. 1.74 and is believed to render the Examiner's objection moot.

The specification was further amended at page 13, line 16 where the paragraph is reciting iron to titanium ratios and due to a typographical error, in one instance, "tin" was substituted inadvertently for titanium.

Claims 9 and 13 were rejected under 35 U.S.C. 112, second paragraph, as indefinite. Claim 9 has been cancelled rendering the rejection as to that claim moot.

Claim 13 has been amended to delete the expression "type" thereby rendering the rejection of claim 13 moot.

Applicants' claim 1, as amended, is drawn to a copper alloy containing specified amounts of chromium, silver, titanium and silicon. There are maximum amounts of iron and tin specified and the balance of the alloy is copper and inevitable impurities. The claim has been further amended to specify that when an optional deoxidizer is present that deoxidizer is selected from a Markush group including boron, lithium, calcium and rare earth metals in accordance with Applicants' specification at page 14, line 21. Claim 1 further specifies that the alloy is essentially zirconium-free in accordance with Applicants' specification at page 15, line 1 and has an electrical conductivity of at least 80% IACS in accordance with Applicants' specification at page 8, line 10. Further, the alloy has a homogeneous microstructure with fine grains commensurate with having the processing steps of hot roll, cold roll, solution anneal as disclosed ion Applicants' specification at page 16, lines 16-25. It is believed that claim 1 as amended is patentable in view of the prior art presently of record in the present application. As the remaining originally filed and amended claims depend from and further limit claim 1, those claims should likewise be deemed allowed.

Claims 1-9, 11 and 15-16 were rejected under 35 U.S.C. 103 as unpatentable over any one of JP02-163331, JP03-072,045, JP2000-080428, JP2000-063968, JP04-221031, US5004520, JP62-182240, JP59-193233 and JP63-038561. Regarding the first four citations in which only English language abstracts had been previously available, Applicants have obtained translations of these documents and provide those for the convenience of the Examiner.

JP02-163331 is drawn to a copper-zinc alloy that may optionally contain one or more elements selected from a Markush group containing 22 different elements plus the rare earth elements. While Applicants' composition may be selected, with hindsight, from the Markush group, there is no motivation in the specification of JP02-163331 to make such a selection. Further, Table 1 identifies that the electrical conductivity of the reference alloys varies from 15% to 76% IACS. There is nothing in the reference to teach or suggest a copper alloy having an electrical conductivity of at least 80% IACS as claimed by the Applicants. Applicants' claim 1 and the claims dependent therefrom should be allowed over JP02163331.

JP03-072045 is drawn to a copper alloy that contains between 0.1 and 10% manganese. A Markush group having 21 members plus the rare earth elements is recited as optional elements that may be present in the alloy. By selective choosing, with hindsight, of those elements, Applicants' composition may be selected. There is nothing in the reference to teach or suggest to one skilled in the art selection of a composition such as claimed by the Applicants. The reference further discloses that the manganese containing alloys have an electrical conductivity of between 16% and 67% IACS. There is nothing in the reference to teach or suggest a composition with an electrical conductivity of at least 80% IACS as claimed by the Applicants. Applicants' claims should be allowed over JP03-072045.

JP2000-080428 is drawn to a copper alloy containing nickel and silicon that may optionally contain one or more elements from two extensive Markush groups. By proper selection, with hindsight, of the elements, a composition similar to that claim by the Applicants may be selected. There is nothing in the reference to teach or suggest such selection of elements. Further, the reference discloses copper alloys have an electrical conductivity of between 40% and 53% IACS. There is nothing in the reference to teach or

suggest a copper alloy with an electrical conductivity of at least 80% IACS as claimed by the Applicants.

JP2000-063968 is drawn to a copper-silver-iron-phosphorous alloy that may optionally contain additional elements selected from a Markush group having 29 members. While the constituents of Applicants' alloy may be selected, with hindsight, from the Markush group, the Markush group compositions are limited to a maximum of 0.1%. Applicants' claimed composition has a minimum of 0.15% chromium. There is nothing in the reference to teach or suggest selection of a composition as claimed by the Applicants. Further, the reference teaches away from a copper alloy having a minimum of 0.15% chromium as claimed by the Applicants.

JP04-221031 is drawn to a copper-beryllium alloy that may further contain one or more optional elements from a Markush group containing 18 elements plus the lanthanide series elements. There is nothing in the reference to motivate one skilled in the art to select Applicants' composition from the Markush group. Further, the reference requires a minimum of 0.1% beryllium. Applicants' claim 1 identifies that when a deoxidizer is optionally present in the alloy, that deoxidizer is selected from a Markush group that does not contain beryllium. Accordingly, the deoxidizer beryllium is only present in Applicants' alloys in impurity amounts and not at a minimum of 0.1% as disclosed in the reference. Applicants' claims should be allowed over the cited reference.

US5,004,520 is drawn to a rolled copper foil that may contain additional elements selected from a Markush group having 19 members. However, the Markush group excludes titanium and the reference teaches away from Applicants' composition having a minimum of 0.15% titanium. Applicants' claims should be allowed over the cited reference.

JP62-182240 discloses a copper-chromium-silicon alloy that may contain additional elements from a listing of 18 elements plus misch-metal. While Applicants' claimed composition can be selected, with hindsight, from the optional elements, there is nothing in the reference to motivate one to make such a selection. Further, the reference discloses that the alloys of the reference have an electrical conductivity of between 12% and 73% IACS. There is nothing in the reference to teach or suggest an alloy with a composition as claimed by the Applicants and having an electrical conductivity in excess of 80% IACS.

JP59-193233 discloses a copper-chromium-zirconium alloy that may further contain additional elements from two separate groups. Combined, these groups specify 26 different elements plus the rare earth elements. There is nothing in the reference to motiviate one skilled in the art to select Applicants' claimed composition. The reference further requires a minimum of 0.005% zirconium as a necessary additive. This teaches away from Applicants' claim 1, as amended, that is drawn to an essentially zirconium-free alloy in which zirconium is present in no more than impurity amounts. Applicant's claims should be allowed over the cited reference.

JP63-038561 is drawn to a copper-chromium-phosphorous alloy that may further contain one or more optional elements from a Markush group having 14 different elements and misch-metal. By proper selection of the optional elements, with hindsight, Applicants' claimed constitution may be found. However, there is nothing in the reference to teach or suggest making those selections. Further, the reference discloses that the copper-chromium-phosphorous alloys are processed by a solution anneal followed by a quench followed by cold rolling and then a second anneal. There is nothing in the reference to teach or suggest a copper alloy having a microstructure commensurate with having been cold-worked prior to the solution anneal as disclosed in Applicants' specification at page 16, lines 19-21. The result is a high strength alloy with fine grains and a homogeneous structure. Applicants' claims should be allowed over the cited reference.

As Applicants' claim 1 should be deemed allowable over the cited references, the dependent claims that depend from and further limit claim 1 should likewise be allowed. With reference to new claim 55, this claim is similar in composition to claim 1 and utilizes the more restrictive transitional phrase "consisting of." For the reasons discussed herein above, it is believed that new claims 55-68 should be allowed.

Accordingly, Applicant submits that none of the references, alone or in combination, anticipate or make obvious the invention as presently claimed and that the application is now in condition for allowance. Therefore, Applicant respectfully requests reconsideration and further examination of the application and the Examiner is respectfully requested to take such proper actions so that a patent will issue herefrom as soon as possible.

If the Examiner has any questions or believes that a discussion with Applicants' attorney would expedite prosecution, the Examiner is invited and encouraged to contact the undersigned at the telephone number below.

Please apply any credits or charge any deficiencies to our Deposit Account No. 23-1665.

Respectfully submitted,
Andreas Bogel, ET. AL.

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